Translation of Original User's Manual

Module 160/15 G

Edition: June 2011
Article No.: 1102540

IEF Werner GmbH
Wendelhofstraße 6
78120 Furtwangen – Germany
Phone: + 49 7723 925-0
Fax: +49 7723 925-100
www.IEF-Werner.de
info@IEF-Werner.de

Change History:

Document Code	Date	Revision
MAN_EN_1102540_Module160-15G_R1a.doc	June 2011	Initial release of this English document (originated from German document “MAN_DE_1077858_Modul160-15G_R3b.doc”)

Trademarks and trade names are used without an assurance of their free usability. Although the texts and examples were created with great thoroughness, errors can not be fully excluded. IEF Werner GmbH does not assume legal responsibility nor any liability for missing or incorrect statements and their consequences.

IEF Werner GmbH reserves the right to modify or improve without previous notice the software or hardware or parts of it was well as the supplied documentation or parts of it.

IEF Werner GmbH expressly reserves all rights for duplication and photomechanical reproduction, including extracts.

We are always grateful for suggestions for improvements and information about errors.

© June 2011, IEF Werner GmbH

Contents

1 Safety **5**
1.1 Definition of the Alerts 5
1.2 General Safety Instructions 5
1.3 Special Hazard Warnings 6

2 Intended Use **7**
2.1 Reasonably Foreseeable Misuse 7

3 Installation Instructions **8**
3.1 Installation Position 8
3.2 Overview of Motor Installation Variants 8
3.2.1 Module 160/15 Installation Variant 1 9
3.2.2 Module 160/15 Installation Variant 5 9
3.3 Attachment 10
3.3.1 Installation of Actuators 12
3.4 Wiring 13
3.4.1 Motors 13
3.4.2 Initiators 13
3.4.2.1 Technical Data of Initiators 14
3.4.2.2 Limit Switch 15
3.4.2.3 Collision Switch 15
3.4.3 Cable Routing 15
3.5 Technical Data 16
3.5.1 Tightening Torques for Screw Connections 16
3.5.2 Technical Data of Module 160/15G 16
3.5.3 Type Label 17
3.5.4 Technical Data when Using a Planetary Gearbox 17
3.5.5 Distances between Axes and Number of Teeth 18
3.5.6 Load Cases 19
3.5.6.1 Torques and Carrying Capacities 19

4 Preventive Maintenance **20**

5 Troubleshooting **21**

6 Repair **23**
6.1 Factory Setting of Axial Toothed Belt Tension 24
6.2 Changing the Axial Toothed Belt 24
6.3 Reference Side of Guide System 25

7 Parts Lists and Drawings **26**
7.1 Module 160/15G with Toothed Belt Gearbox 26

7.2 Module 160/15G with Direct Drive 28
7.3 Carriage Module 160/15G, Length 195 mm 30
7.4 Toothed Belt Gearbox 32
7.5 Flange 34
7.6 Assemblies/Components Specific to the Version 35
7.6.1 Installation of Flange Gearbox (e.g. Planetary Gearbox Type PLFE64) 35
7.6.2 Overview of Clamping Elements 36

8 Declaration of Incorporation 37

1 Safety

1.1 Definition of the Alerts

WARNING

Indicates a potentially hazardous situation. Read the warnings before performing the task.

CAUTION

Indicates a potentially hazardous situation which, if not avoided, could result in minor or moderate injury, damage to equipment or material. Read the cautions before performing the task.

NOTE Gives additional information.

1.2 General Safety Instructions

The module may be put into operation only by specialist personnel who have received technical safety instructions and can assess potential hazards. In addition, all chapters of the User's Manual have to be read and understood completely.

WARNING

The system has to be de-energized for all installation, disassembly or repair work. High risk of injuries!

WARNING OF HOT SURFACE

During operation, the heating of the motor, in particular of stepper motors, can cause the burning of the skin when touching the motor. Install a protective device, if possible! Do not touch the marked areas or only after an adequate cooling time.

CAUTION

Motor connectors may not be inserted or disconnected under live condition. Risk of burning of the contacts and risk of flying sparks.

CAUTION

Linear modules always have to be operated in connection with suitable safety devices (e.g., safety cell, protective room, protective housing, light curtain).

NOTE Observe the Declaration of Incorporation (see Section *Declaration of Incorporation, page 37*).

1.3 Special Hazard Warnings

In addition, this User's Manual also contains the following special hazard warning:

RISK OF CRUSHING

Risk of limb crush injuries during operation at these component positions.

2 Intended Use

The linear drive unit Module 160/15 G (G means ‘Gegenläufig’ = 'in opposing directions’; see *Figure 1*) was designed for industrial applications. The use of a high-quality guide ensures high dynamics and good running characteristics. The guide elements have special seals which protect them from coarse dirt. However, the application of the linear drive unit Module 160/15G under conditions with increased dirt and abrasive dusts should be avoided because no further protective measures, such as bellow cover, etc., are available.

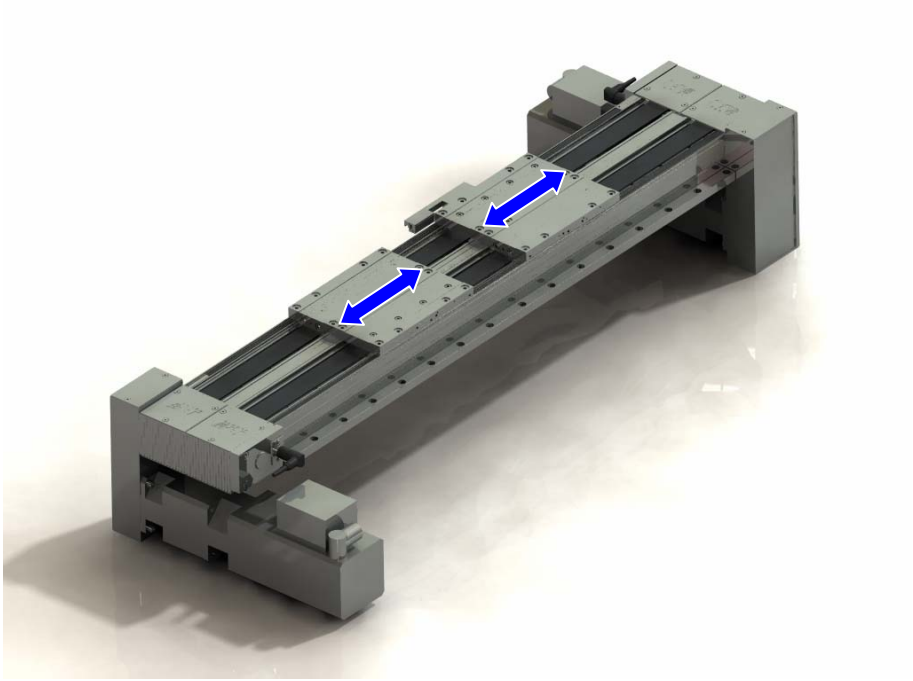


Figure 1: Overview of Module 160/15 G

The fields of application for the Module 160/15 G are correspondingly versatile. They range from component insertion systems for SMD components, insertion and pressing-in processes in precision engineering, loading and unloading stations of machine tools to manipulators for the packaging industry.

2.1 Reasonably Foreseeable Misuse

The Module 160/15 G is **not** to be used for certain applications such as the transport of persons and animals or as a pressing/bending device for cold working of metal.

The use of the linear module without additional measures is also **not** possible in special fields of application, such as the chemical or food industry or in explosive atmospheres.

In case of doubt, consult the manufacturer.

3 Installation Instructions

3.1 Installation Position

The installation position is optional, i.e. the Module 160/15 G can be installed horizontally as well as vertically.

CAUTION

For a vertical installation position, use motors with spring-operated brake to prevent the lowering of the drive in de-energized condition!

3.2 Overview of Motor Installation Variants

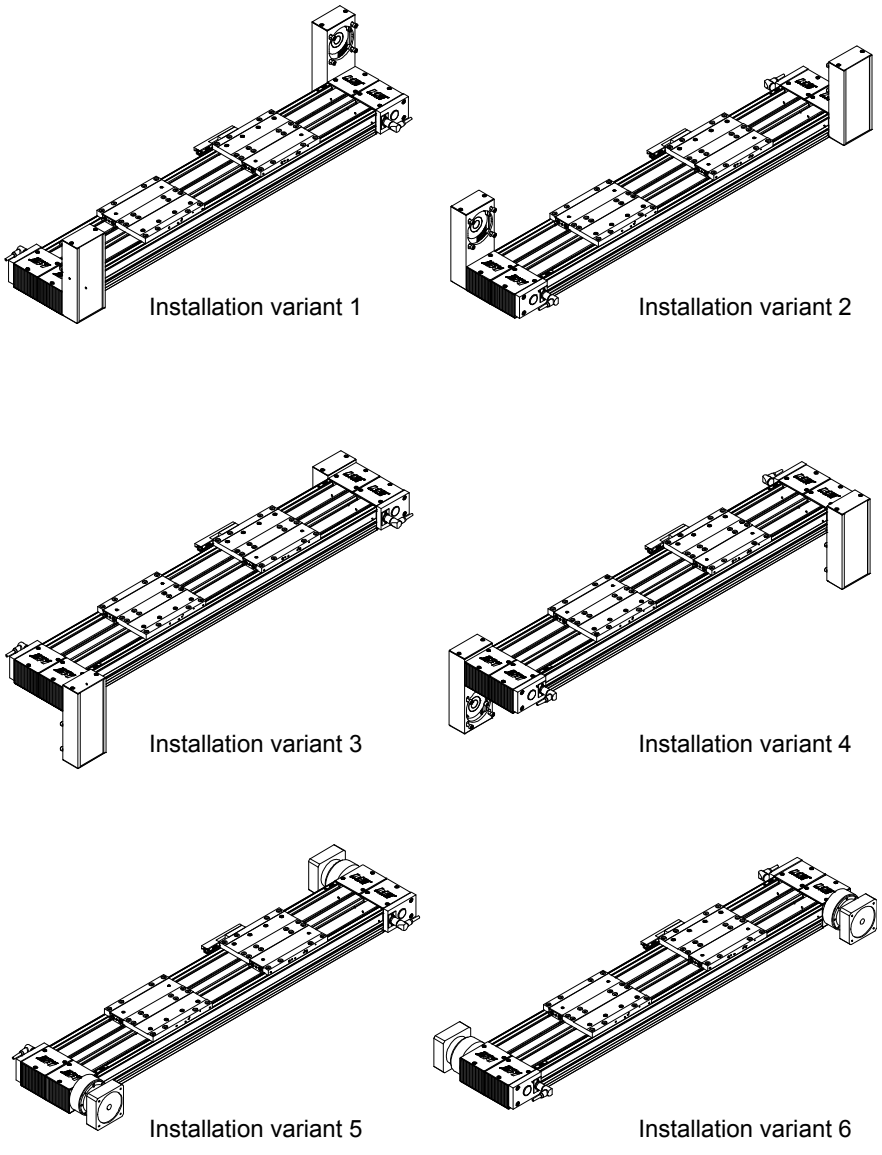


Figure 2: Installation Variants of Module 160/15 G

3.2.1 Module 160/15 G Installation Variant 1

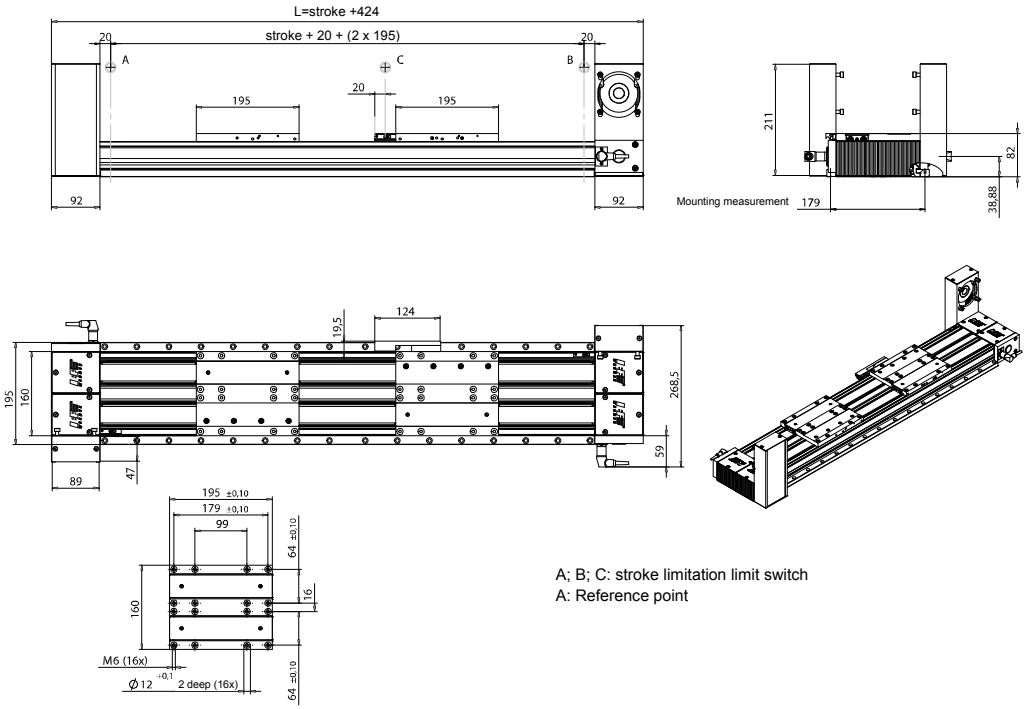


Figure 3: Module 160/15 G subassembly No. 1000477, installation variant 1

3.2.2 Module 160/15 G Installation Variant 5

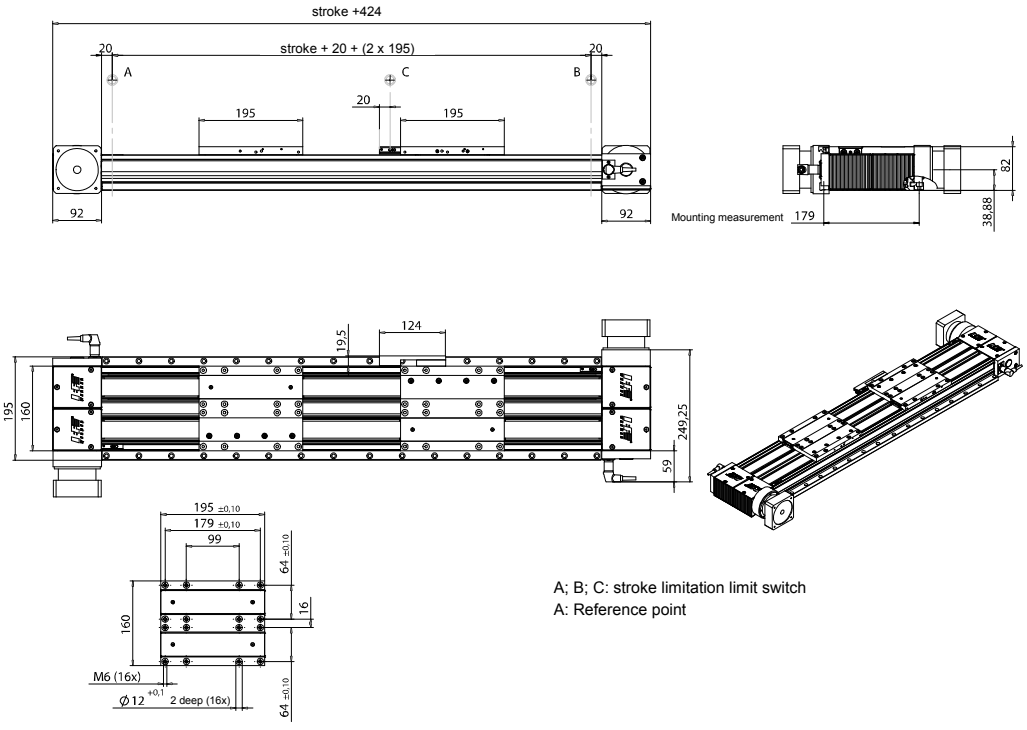


Figure 4: Module 160/15 G subassembly No. 1000477, installation variant 5

3.3 Attachment

In most applications, the Module 160/15 G is attached with clamping profiles / clamping elements (see *Figure 5, below*) to a flat assembly surface. The carriage moves freely.

Other types of attachment of the linear module, for example with additional drilled holes in the basic profile, should be avoided. In almost all cases, these drilled holes cause tension in the guide basis and the damaging of inner parts of the module.

CAUTION

The clamping area should have a planeness of 0.1 mm/m².

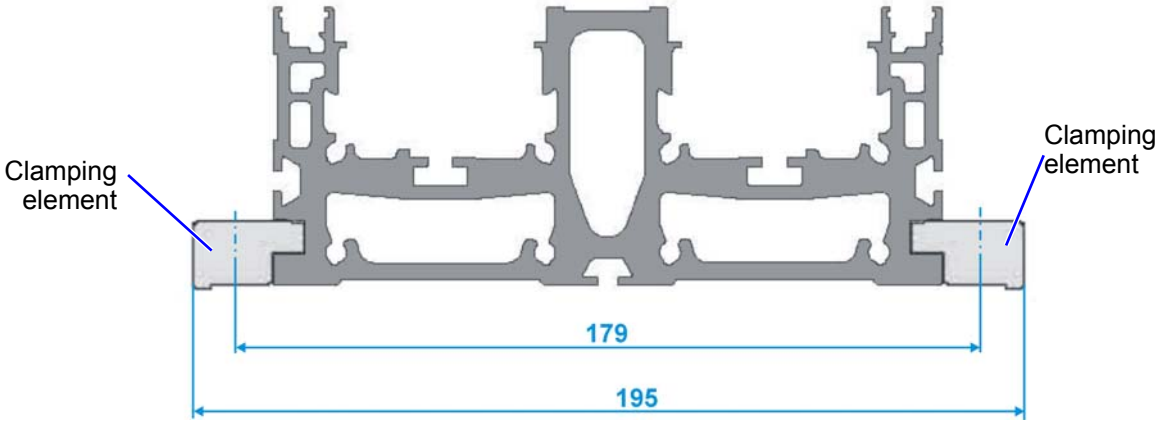


Figure 5: Crosswise cut with clamping elements and dimensions (Module 160/15)

NOTE For an overview of the different clamping elements, see Section *Overview of Clamping Elements, page 36*.

RISK OF CRUSHING

Risk of limb crush injuries during operation at these component positions.

Risk of crushing exists at the start and end of the stroke as well as between both movable carriages (see *Figure 6*).

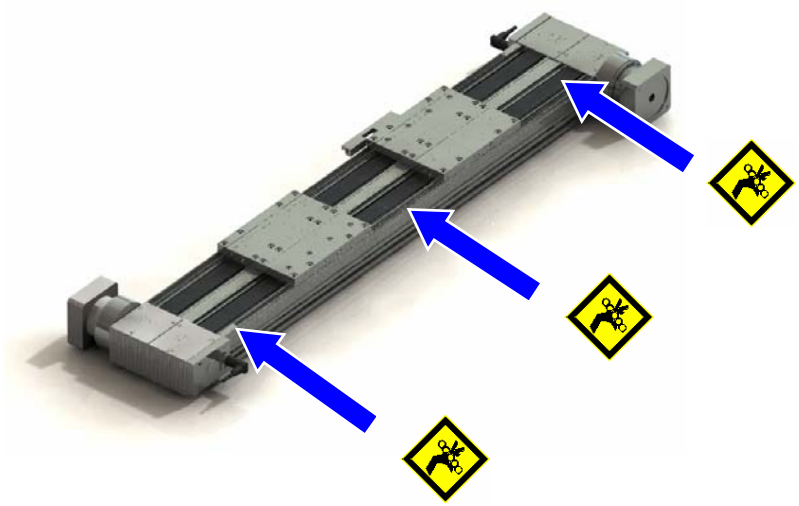


Figure 6: Potential crushing positions

Figure 7 shows the drilling pattern of a standard carriage.

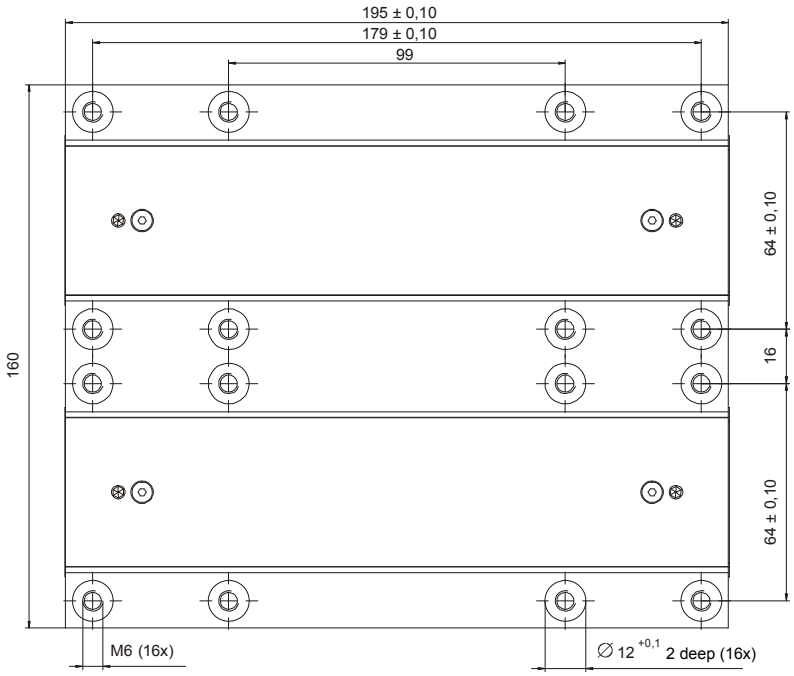


Figure 7: Standard carriage drilling pattern

Figure 8 shows a centering ring for mounting clamping elements:

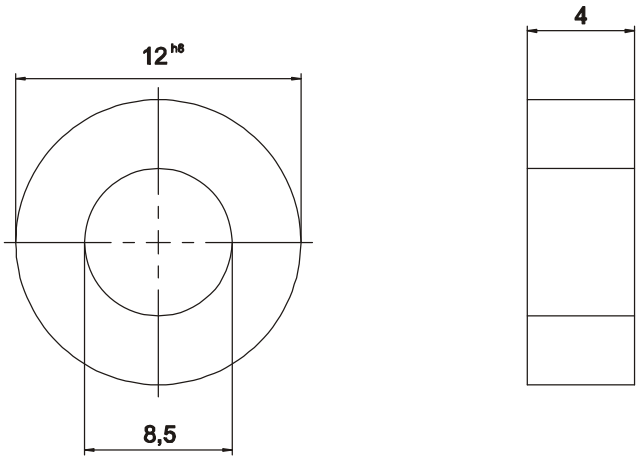


Figure 8: Centering ring (Art. No. 1024021)

With the M6 threaded holes on the carriage, different axis configurations can be achieved, possibly via an adapter plate.

The counterbores with 12 mm dia. serve for centering of the clamping elements with possible adjustment.

3.3.1 Installation of Actuators

Actuators (gripper modules, cylinders) attached to the linear module are normally attached via the drilling pattern on the carriage (*Figure 7, Page 11*) to the linear drive unit. Special drilling pattern available on request.

3.4 Wiring

3.4.1 Motors

CAUTION

The electrical connection of the motors is performed according to the motor data sheet. For customer-specific motors, the data sheet must be requested from the respective manufacturer and the motor connected accordingly.

3.4.2 Initiators

Inductive proximity switches (PNP-NC, Article No.: 025165; see *Figure 9*) are used as standard limit switches for the distance traveled as well as for collision protection. These switches are not safety limit switches according to EN60204-1. Optionally, an additional reference point switch (PNP-NO, Article No.: 726744; see *Figure 10*), can also be retrofitted in the Module 160/15 G. The active switch area is marked with a colored circle symbol. The NCs have a green dot, the NOs have a red dot. The initiators and their supply lines are protected in a cable duct which is integrated in the basic profile and are routed jointly to a connector.

A plastic strip serves to cover the cable duct. The replacement of an initiator or its shifting is easily possible after removal of this plastic strip from the cable duct.

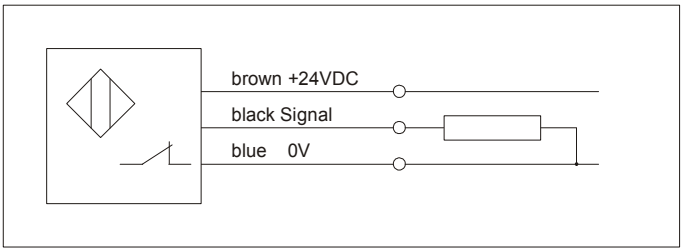


Figure 9: Connection assignment PNP-NC, Art. 025165

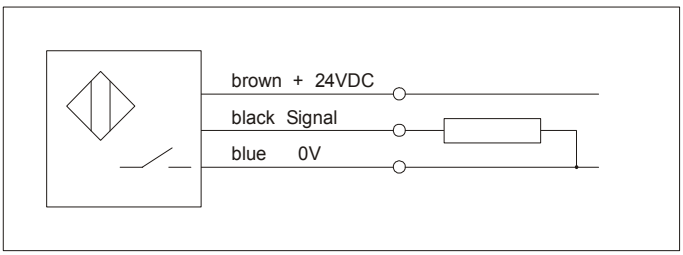


Figure 10: Connection assignment PNP-NO, Art. 726744

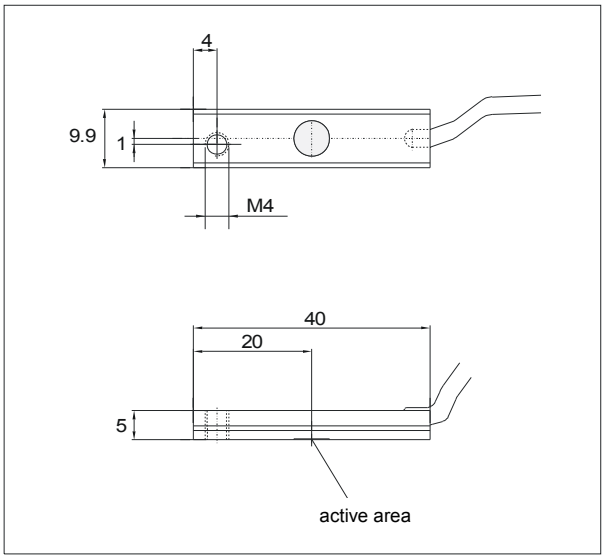


Figure 11: Dimensional sketch of inductive proximity switch

3.4.2.1 Technical Data of Initiators

Parameter	Value
Operating voltage including ripple	(10 ... 30) VDC ≤ 15%
Current load capacity	I_a ≤ 200 mA
Voltage drop at I_a max.	≤ 2.5 V
Switching frequency	≤1000 Hz
Self current consumption	≤ 15 mA
Nominal operating distance on steel	2.0 mm ± 10%
Switch hysteresis	(3 ... 20) %
Reproducibility (U = const.)	±0.01 mm
Operating temperature	- 25 °C ... + 70 °C
Protection class	IP 65
Short-circuit proof	yes
Protected against polarity reversal	yes

Figure 12: Technical data of initiators

3.4.2.2 Limit Switch

The pin assignment of the limit switch is as follows (see *Figure 13*):

Pin No.	Assignment	IEF Werner cable
1	+ 24V	Brown
2	Limit switch, negative direction of movement, carriage 1	Green
3	0 V	White
4	Limit switch, negative direction of movement, carriage 2	Yellow
5	Reference switch (optional)	Gray

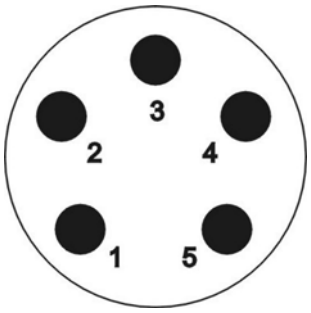


Figure 13: Pin assignment of limit switch

3.4.2.3 Collision Switch

The collision switch is located on one of the movable carriages. This switch is supplied with open cable end. The switch signal of the collision switch must be wired on both carriages as function "Limit switch of positive direction of movement".

3.4.3 Cable Routing

Suitable cable routing has to be used for all moving cables to effectively prevent cable breaks.

The minimum radius r_{min} for cable routing chains is calculated for IEF Werner cables according to the following formula:

$$r_{min} \geq 10 \times \text{cable diameter}$$

When different cables are used, EN 60204 must be observed. In addition, it must be ensured that a space reserve of 30% is kept free within the routing chains. A strain relief for the cables has to be attached at the outlet of the cable routing chain.

We recommend to also order cables and cable routing chains at IEF Werner GmbH.

3.5 Technical Data

3.5.1 Tightening Torques for Screw Connections

Screw 8.8	Tightening torque [Nm]
M3	1.1
M4	2.5
M5	5.0
M6	8.5
M8	21.0
M10	41.0
M12	71.0
Screw 12.9	**Tightening torque [Nm]**
M4 (attachment of guide rail)	4.9

3.5.2 Technical Data of Module 160/15G

Parameter	Value
Repetition accuracy	± 0.05 mm
Weight (without motor)	14 kg
Weight increase per 100 mm stroke	1.4 kg
Maximum movement speed	5 m/s
Maximum acceleration	40 m/s²
Maximum transferable feed force with maximum movement speed (5 m/s)	810 N
Torque Mx (see *Figure 17, page 19*)	100 Nm
Torque My (see *Figure 17, page 19*)	100 Nm
Torque Mz (see *Figure 17, page 19*)	100 Nm
Carrying capacity C1 (see *Figure 17, page 19*)	1500 N
Carrying capacity C2 (see *Figure 17, page 19*)	800 N
Geometrical moment of inertia of profile cross-section at center of gravity:	
Ix =	1196016 mm^4
Iy =	8689482 mm^4

Figure 14: Technical data

3.5.3 Type Label

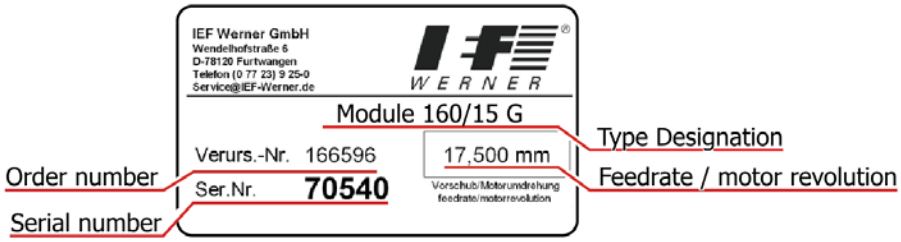


Figure 15: Type label (example)

3.5.4 Technical Data when Using a Planetary Gearbox

Before start-up, pay attention to the possible input speeds specified by the gearbox manufacturers. Excessive input speeds could cause higher gearbox wear and / or thermal problems.

The precision of the linear drive unit is influenced by the play on reversal of the gearbox.

Example:

The play on reversal of the gearbox (P) is 9 angular minutes.

What is the play on reversal at the carriage of the linear drive unit?

Feed constant of linear drive unit (Fc): 140 mm

Play on reversal at the carriage = (Fc • P) / (360 x 60)

= (140 mm • 9) / (360 x 60)

= 0.058 mm

By all means, pay attention to the specifications of the respective gearbox manufacturer.

For example: http://www.neugart.de/index.php/de/Produkte/Standardgetriebe

http://www.wittenstein-alpha.de/896.htm

3.5.5 Distances between Axes and Number of Teeth

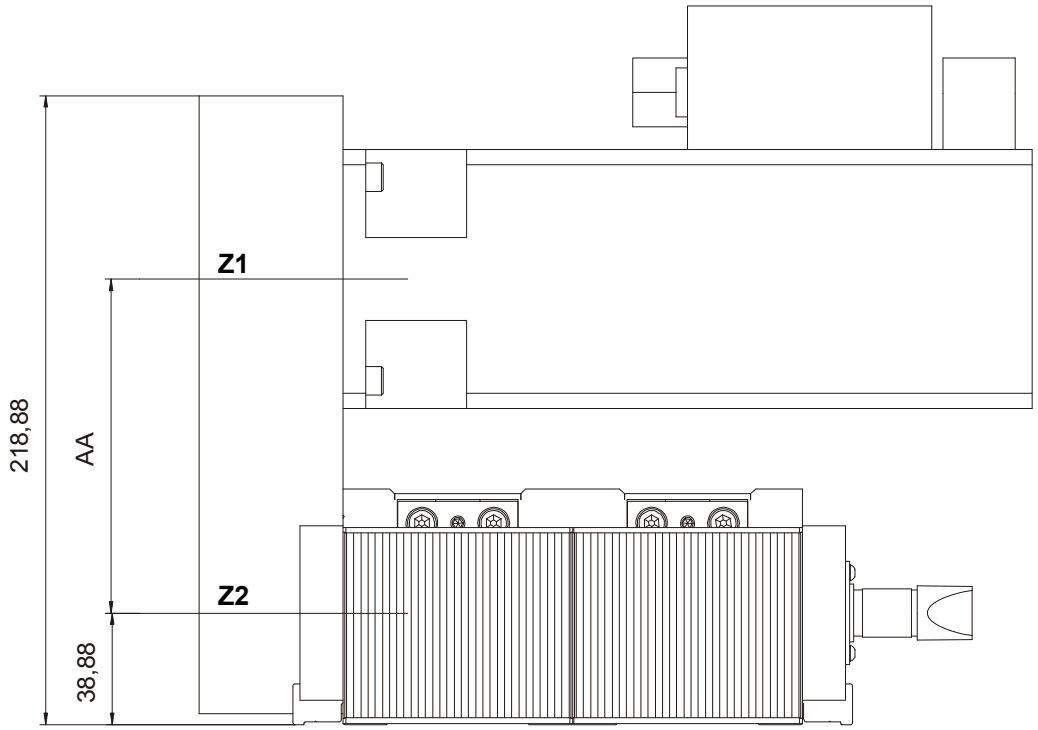


Figure 16: Explanation of the table of distances between axes, subassembly No.: 1000475

Maintain the following distances between axes for the specified standard gear ratios:

The gearbox toothed belt tension (motor installation variants 1-6, see *Figure 2, page 8*) is 150 N.

i	Z1 output	Z2 drive	Drilled hole drive	Length of toothed belt	AA [mm]	Feed constant [mm]
1:1 42		42	max. Ø 32 mm	450 mm	120	140
2.1 : 1	42	20	max. Ø 16 mm	390 mm	116.18	66.667
2.625 : 1	42	16	max. Ø 14 mm	390 mm	120.73	53.33
3 : 1	42	14	max. Ø 12 mm	375 mm	115.35	46.667

3.5.6 Load Cases

3.5.6.1 Torques and Carrying Capacities

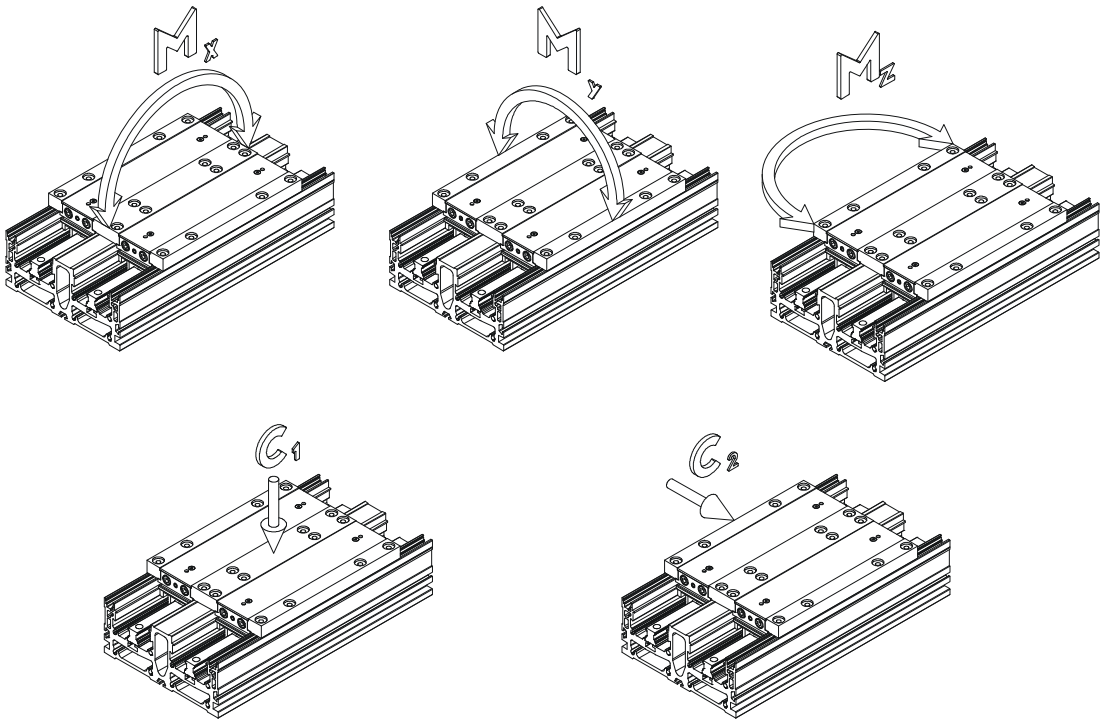


Figure 17: Torques and carrying capacities

Extract from technical data (*Figure 14, page 16*):

Parameter	Value
Torque Mx	100 Nm
Torque My	100 Nm
Torque Mz	100 Nm
Carrying capacity C1	1500 N
Carrying capacity C2	800 N

Figure 18: Table of torques and carrying capacities

4 Preventive Maintenance

During the design of Module 160/15 G, great importance was placed on the use of maintenance-free components. All roller elements are provided with lifetime lubrication in the factory.

The guide carriages are equipped with auxiliary lubrication elements. An operating performance of 10000 km is therefore achieved with the initial lubrication. In single-shift operation with a stroke of 500 mm and 20 cycles per minute, this is equivalent to an operating performance of almost 5 years.

After reaching the specified operating performance, the guide carriage can be relubricated with a special grease gun (IEF Werner Art. No.: 1055123) (see *Figure 19*). The grease gun is filled with high-performance lubricant Dynalub.

One side of the carriage unit has a funnel-shaped lubrication nipple. External lubrication by means of the hand-held grease gun can be performed directly at the carriage. On the opposite side, the toothed belt must be released for lubrication of the guide carriages to access the grease nipples of the guide carriages.

NOTE Do no use grease containing ester oils.

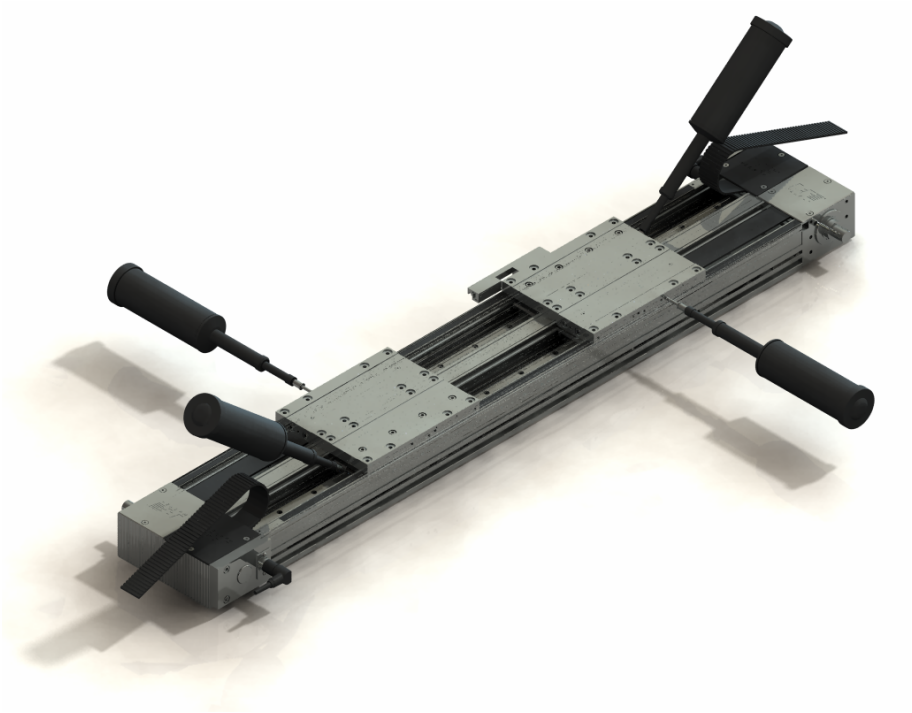


Figure 19: Lubrication of the guide carriage

5 Troubleshooting

Malfunction	Cause	Correction
Increased running noise	Nominal service life of guide carriages exceeded	Replace all guide carriages.
	Guide carriages worn by overload (excessive torques, etc.)	Replace all guide carriages, reduce load.
	Guide carriages worn by excessive soiling	Replace all guide carriages, clean guide rails more frequently and relubricate guide carriage.
	Guide rails worn	Replace guide rails, replace all guide carriages, check load, protect linear module from excessive soiling.
	Guide rails corroded	Replace guide rails, replace guide carriages as required.
	Reversing unit worn	Replace reversing unit.
	Drive unit worn	Replace drive unit.
	Toothed belt runs dry	Lightly grease toothed belt on the toothed inner side.
	Excessive toothed belt tension	Readjust toothed belt tension on carriage part.
	Toothed belt runs canted	Align toothed belt on fastener (pressure piece and gear segment), evenly tighten M6 fillister head screws!
	Heavy soiling of toothed belt on the toothed inner side	Replace toothed belt, protect linear module from heavy soiling.
	Toothed belt damaged	Replace toothed belt.
	Motor (motor bearing) damaged	Replace motor.
	Motor with brake, brake does not release	Apply current to the brake, if the brake still does not release, replace motor.
Linear drive unit does not move	Limit switch cable not connected	Connect the cable.
	Limit switch, collision switch defective	Replace limit switch, collision switch.
	Limit switch cable damaged	Check limit switch cable.
	Soldered connection on socket became loose	Solder wires.
	Incorrect motor connection	Check and change connector assignment, if required.
	Motor damaged	Replace motor.

Continuation of troubleshooting:

Malfunction	Cause	Correction
Linear drive unit does not move	Error in power electronics or control unit	Check the power electronics or the control unit.
	Motor cable damaged	Check motor cable, replace cable, if required.
	Belt transmission: Toothed disk slips	Firmly tighten clamping set and secure screws with safety lacquer.
	Planetary gearbox: Coupling between motor and planetary gearbox slips	Firmly tighten coupling and secure screws with safety lacquer.
	Motor with brake, brake does not release	Apply current to the brake, if the brake still does not release, replace motor.
Play on reversal	Gearbox toothed belt not tensioned	Tension gearbox toothed belt.
	Toothed disk of motor has play (parallel key connection)	Replace toothed disk of motor and, if the parallel key groove of the motor is damaged, replace motor.
	Drive tooth belt without adequate pre-tension	Tension drive tooth belt.
Linear drive unit moves mechanically against the stop during the reference run	Incorrect direction of rotation	Change motor direction of rotation.
	Broken motor cable	Replace cable.

6 Repair

WARNING

Always de-energize the system before beginning the repair.

WARNING

Generally, repairs must be performed by specialist personnel who have read and understood the User's Manual.

CAUTION

Only when original parts are used can warranty claims be accepted by IEF Werner GmbH.

6.1 Factory Setting of Axial Toothed Belt Tension

The toothed belt tension of the axial toothed belt is set with adjusting screws (see *Figure 20*). When delivered, the toothed belt tension is correct and the adjusting screws are secured in position with safety lacquer.

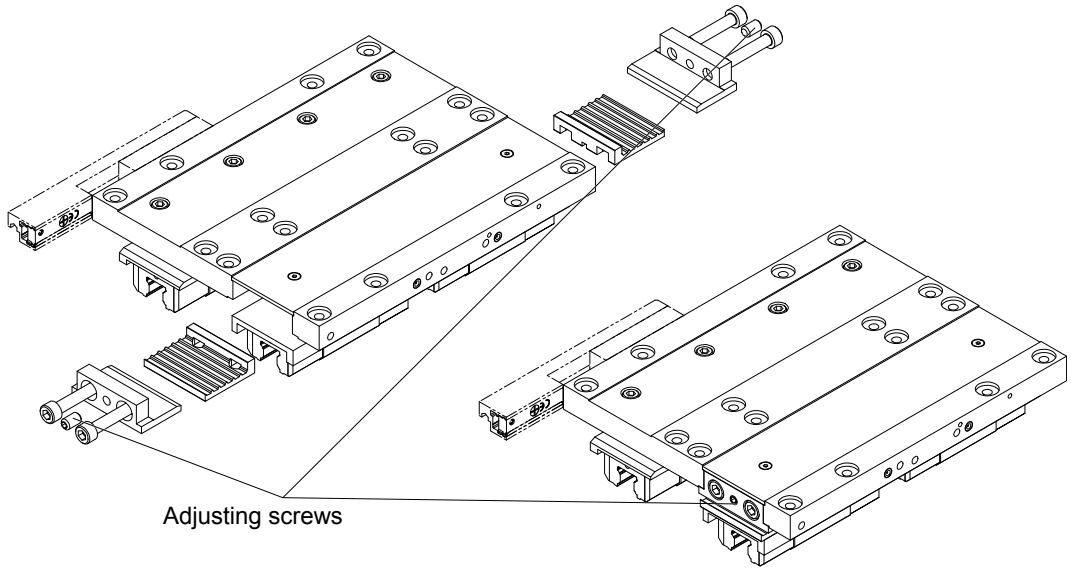


Figure 20: Adjusting screws for belt tension

NOTE Do not remove the safety lacquer at the adjusting screws.

The gearbox toothed belt tension (motor installation variants 1-6, see *Figure 2, page 8*) is 150 N.

6.2 Changing the Axial Toothed Belt

For explanation, see *Figure 22, page 27* and *Figure 24, page 31*.

To change the axial toothed belt, proceed as follows:

- *Figure 24, page 31*: Loosen the screws M6 x 35 (pos.100), remove pressure piece (Pos. 40), remove toothed quadrant (Pos. 30).
- *Figure 22, page 27*: remove plastic covers (Pos.100).
- Remove defective toothed belt, install new toothed belt.
- Insert toothed belt in the middle of toothed quadrant (Pos. 30) and pressure piece (Pos. 40). The pressure piece and the toothed quadrant can be wrapped with a thin adhesive tape. This makes it easier to insert these parts into the carriage. Tension the pressure piece with screws M6 x 35 (pos.100) on "block".
- Belt tension adjusted in factory: Do not remove the safety lacquer on the screws (pos. 120, *Figure 24, page 31*)!
- Re-install plastic covers (pos.100, *Figure 22, page 27*).

6.3 Reference Side of Guide System

Both guide rails are each positioned at the outward pointing edges of the basic profile. The reference side of the carriage plate which is indicated by two locating pins which are attached one-sided is on the same side as the reference side of the basic profile (marked by a 90° notch). When new, the guide carriages have an increased slide resistance. After a short run-in period (1 to 2 days), the slide resistance is reduced to normal. The adapter plates are each placed on the guide carriage at the guide carriage reference side.

NOTE Do **not** interchange the carriage plate and the adapter plates with the carriage plates and/or adapter plates of other linear drive units Module 160/15 G!

Do **not** interchange adapter plates within the same linear drive unit!

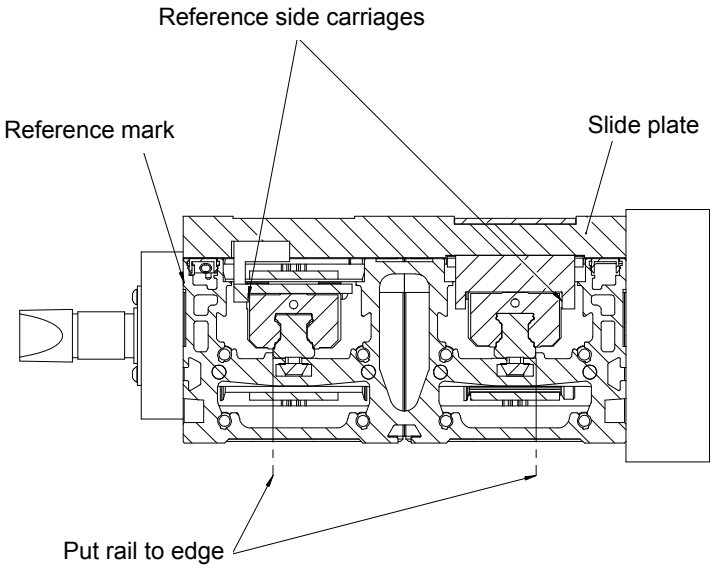


Figure 21: Guide system

7 Parts Lists and Drawings

7.1 Module 160/15 G with Toothed Belt Gearbox

Subassembly 1000588 (drawing see *Figure 22, page 27*)

Drawing Pos.	Article No.	Part (1)/ Subassembly (0)	Designation	E/V
10	1000478	0	Basic profile 160/15	
20	1000688	0	Ball rail guide, type 15	V
30	1061034	1	Toothed belt 32ATL5	V
40	626061	1	Fillister head screw DIN 912-M4x16-12.9	
50	1023994	1	Groove slide block L=70mm	
60	731466	1	Groove slide block	
70	1025262	1	Housing with damper	
80	626037	1	Fillister head screw DIN 912 - M6x20-8.8	
90	627581	1	Cylindrical pin ISO 8734-5m6x20-A	
100	1034373	1	Plastic cover	
110	626124	1	Hexagon socket head countersunk screw ISO 10642-M4x10-8.8	
120	1045543	1	Shim DIN 988-36x45x0.1	
130	1019278	1	Bearing cover	
140	028585	1	Limit switch holder	
150	025165	1	Inductive switch, PNP-NC	E
160	726744	1	Inductive switch, PNP-NO	E
170	030887	1	Special screw M4x7	
180	725164	1	Angular coupling	
190	725163	1	Round plug	
200	025626	1	Retaining sheet metal	
210	627630	1	Oval head screw ISO 7380-M3x8-8.8	
220	626056	1	Fillister head screw DIN 912-M6x16-8.8	
230	1044440	1	Plastic clip	
240	1018820	1	Drive unit 160/15/32	V
“	1077831	1	Drive unit 80/15/32/FLG	V
250	1042984	1	Pulley	V
260	1018827	1	Stop	+
270	1056053	1	Carriage unit 160/15 G L=195mm	V
- - -	1000041	0	Motor	V
290	1000475	0	Toothed belt gearbox	V
330	1024065	1	Switch rail - collision switch	
340	1024068	1	Distance washer	

+ = usage depending on version
E = replacement part
V = wearing part

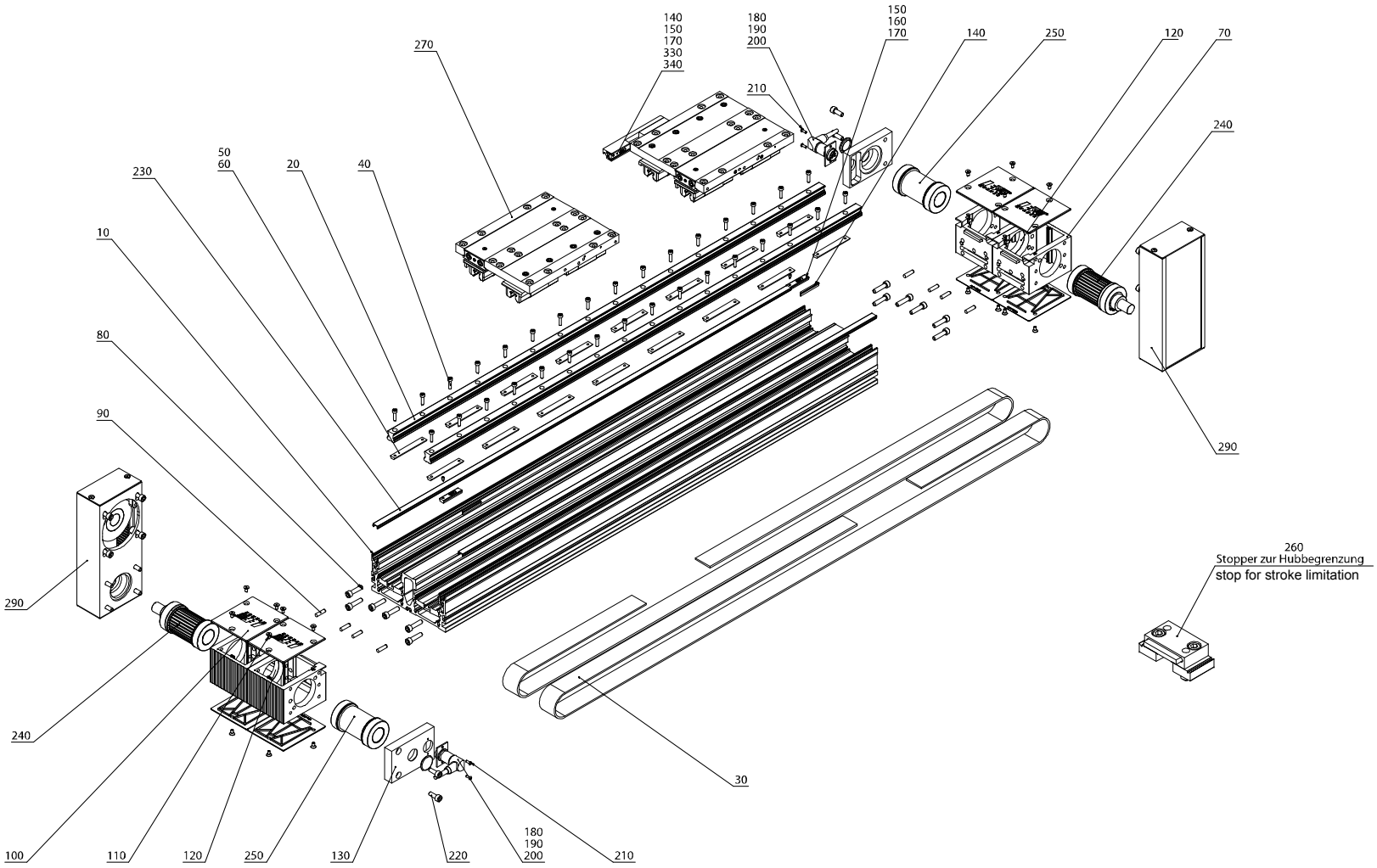


Figure 22: Linear drive unit 160/15 G with toothed belt gearbox

7.2 Module 160/15 G with Direct Drive

Subassembly 1000588 (drawing see *Figure 23, page 29*)

Drawing Pos.	Article No.	Part (1)/ Subassembly (0)	Designation	E/V
10	1000478	0	Basic profile 160/15	
20	1000688	0	Ball rail guide, type 15	V
30	1061034	1	Toothed belt 32ATL5	V
40	626061	1	Fillister head screw DIN 912-M4x16-12.9	
50	1023994	1	Groove slide block L=70mm	
60	731466	1	Groove slide block	
70	1025262	1	Housing with damper	
80	626037	1	Fillister head screw DIN 912 - M6x20-8.8	
90	627581	1	Cylindrical pin ISO 8734-5m6x20-A	
100	1034373	1	Plastic cover	
110	626124	1	Hexagon socket head countersunk screw ISO 10642-M4x10-8.8	
120	1045543	1	Shim DIN 988-36x45x0.1	
130	1019278	1	Bearing cover	
140	028585	1	Limit switch holder	
150	025165	1	Inductive switch, PNP-NC	E
160	726744	1	Inductive switch, PNP-NO	E
170	030887	1	Special screw M4x7	
180	725164	1	Angular coupling	
190	725163	1	Round plug	
200	025626	1	Retaining sheet metal	
210	627630	1	Oval head screw ISO 7380-M3x8-8.8	
220	626056	1	Fillister head screw DIN 912-M6x16-8.8	
230	1044440	1	Plastic clip	
240	1018820	1	Drive unit	V
“	1077831	1	Standard drive unit	V
250	1042984	1	Pulley	V
260	1018827	1	Stop	+
270	1056053	1	Carriage unit 160/15 G L=195mm	V
280	1000041	0	Motor	V
290	1000886	0	Planetary gearbox	V
310	1050247	1	Flange	
- - -	626049	1	Fillister head screw DIN 912-M6x35-8.8	
- - -	626061		Fillister head screw DIN 912-M4x16-8.8	
330	1024065	1	Switch rail - collision switch	
340	1024068	1	Distance washer	

+ = usage depending on version
E = replacement part
V = wearing part

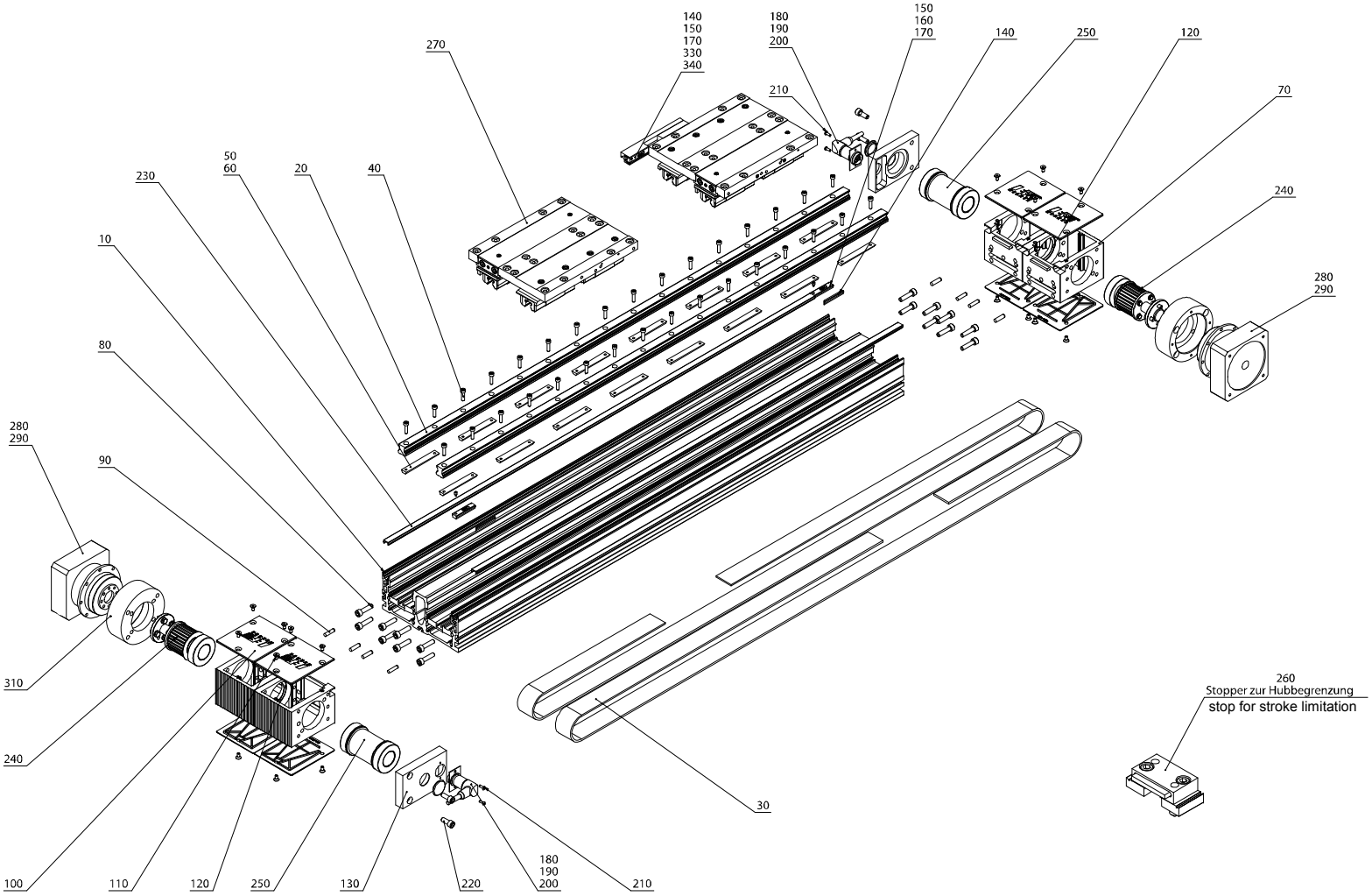


Figure 23: Linear drive unit 160/15 G with direct drive

7.3 Carriage Module 160/15 G, Length 195 mm

Article No.: 1056053 (drawing see *Figure 24, page 31*)

Drawing Pos.	Article No.	Part (1)/ Subassembly (0)	Designation	E/V
10	1029382	1	Guide carriage, size 15	V
20	1046583	1	Guide carriage size 15, for external lubrication	V
30	1059202	1	Toothed quadrant	
40	1023935	1	Pressure piece	
50	1041818	1	Adapter plate	
60	1056056	1	Carriage plate 160/15 G	
70	1023944	1	Cover	
80	626484	1	Fillister head screw DIN 912-M4 x 25-8.8	
90	626500	1	Fillister head screw DIN 912-M6 x 18-8.8	
100	626049	1	Fillister head screw DIN 912-M6 x 35-8.8	
110	626115	1	Hexagon socket head countersunk screw DIN 7991 M3 x 8	
120	626190	1	Threaded pin DIN 913-M6 x 10-8.8	
130	1023942	1	Threaded bush	
140	626317	1	Cylindrical pin ISO 8734-4x20-A	
150	1031602	1	O-ring, type 1,80 – 1,80	E
160	1028704	1	Funnel-shaped grease nipple, DIN 3405, type D4	
170	1062938	1	Adapter plate 160/15 G	
180	626487	1	Fillister head screw DIN 912-M5 x 10-8.8	

E = replacement part
V = wearing part

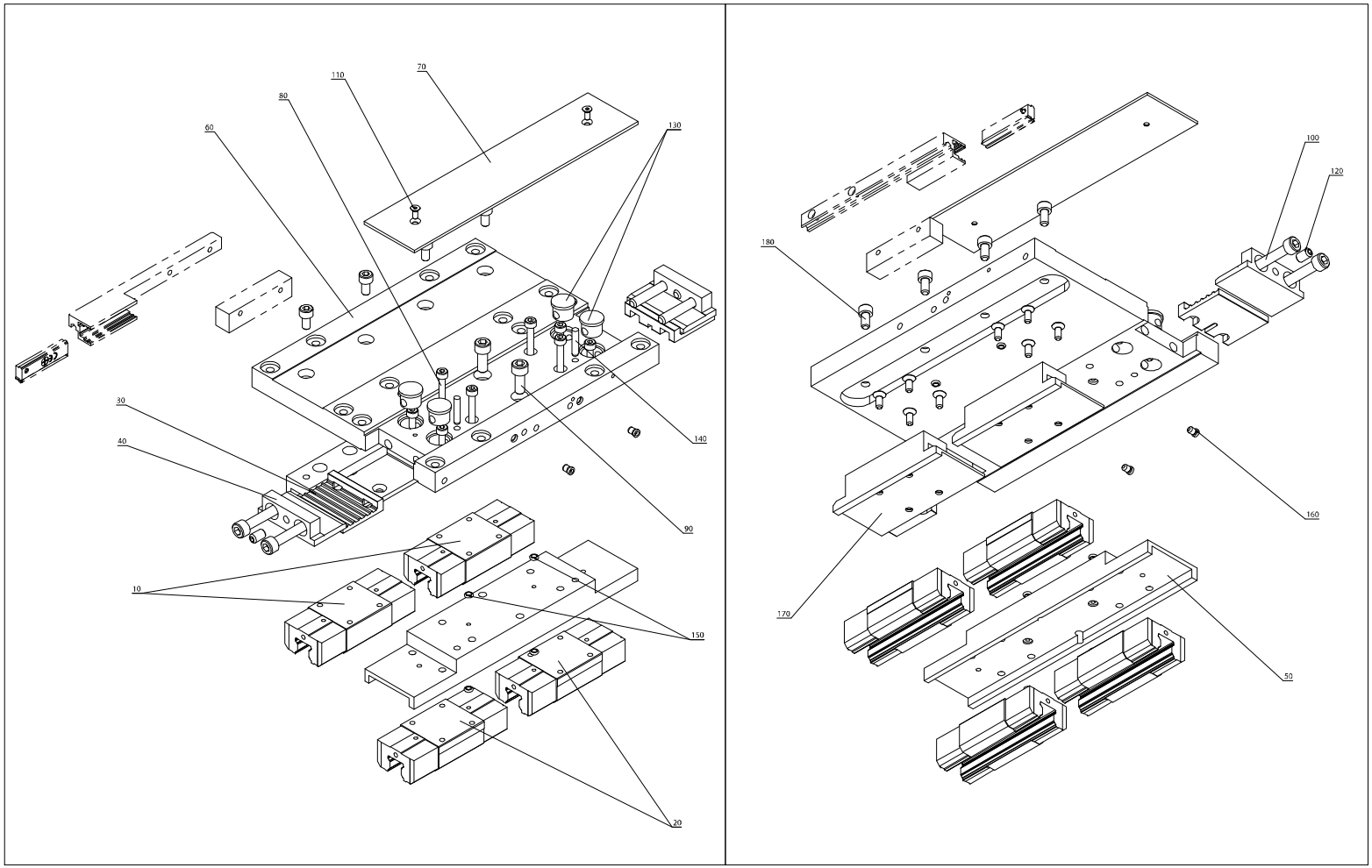


Figure 24: Carriage 160/15 G, exploded view

7.4 Toothed Belt Gearbox

Subassembly 1000475 (drawing see *Figure 25, page 33*)

Drawing Pos.	Article No.	Part (1)/ Subassembly (0)	Use	Designation
10	1021557	1		Housing
20	029690	1		Toothed disk AT5/42-0
30	1007376	1	+	Toothed disk AT5/42-2
40	028722	1	+	Toothed disk AT5/42-2
50	1006664	1	+	Toothed disk AT5/42-2
60	732770	1		Clamping set 16/32
70	732770	1	+	Clamping set 16/32
80	732294	1	+	Clamping set 20/38
90	734168	1	+	Clamping set 22/40
95	526735	1	+	Toothed disk AT5/20-2 including clamping set 12
98	525983	1	+	Toothed disk AT5/20-2 including clamping set 14
100	525984	1	+	Toothed disk AT5/20-2 including clamping set 16
110	1005790	1	+	Toothed disk AT5/14-2 including clamping set 10
120	1005756	1	+	Toothed disk AT5/14-2 including clamping set 12
130	1003999	1		Belt transmission cover
140	028574	1		Gliding block
150	626072	1		Oval head screw ISO 7380-M4 x 8-8.8
160	1004001	1		Push-in cover
170	730353	1	+	Toothed belt 25AT5/390
180	732286	1	+	Toothed belt 25AT5/375
190	908243	1	+	Toothed belt 25AT5/450

+ = usage depending on version

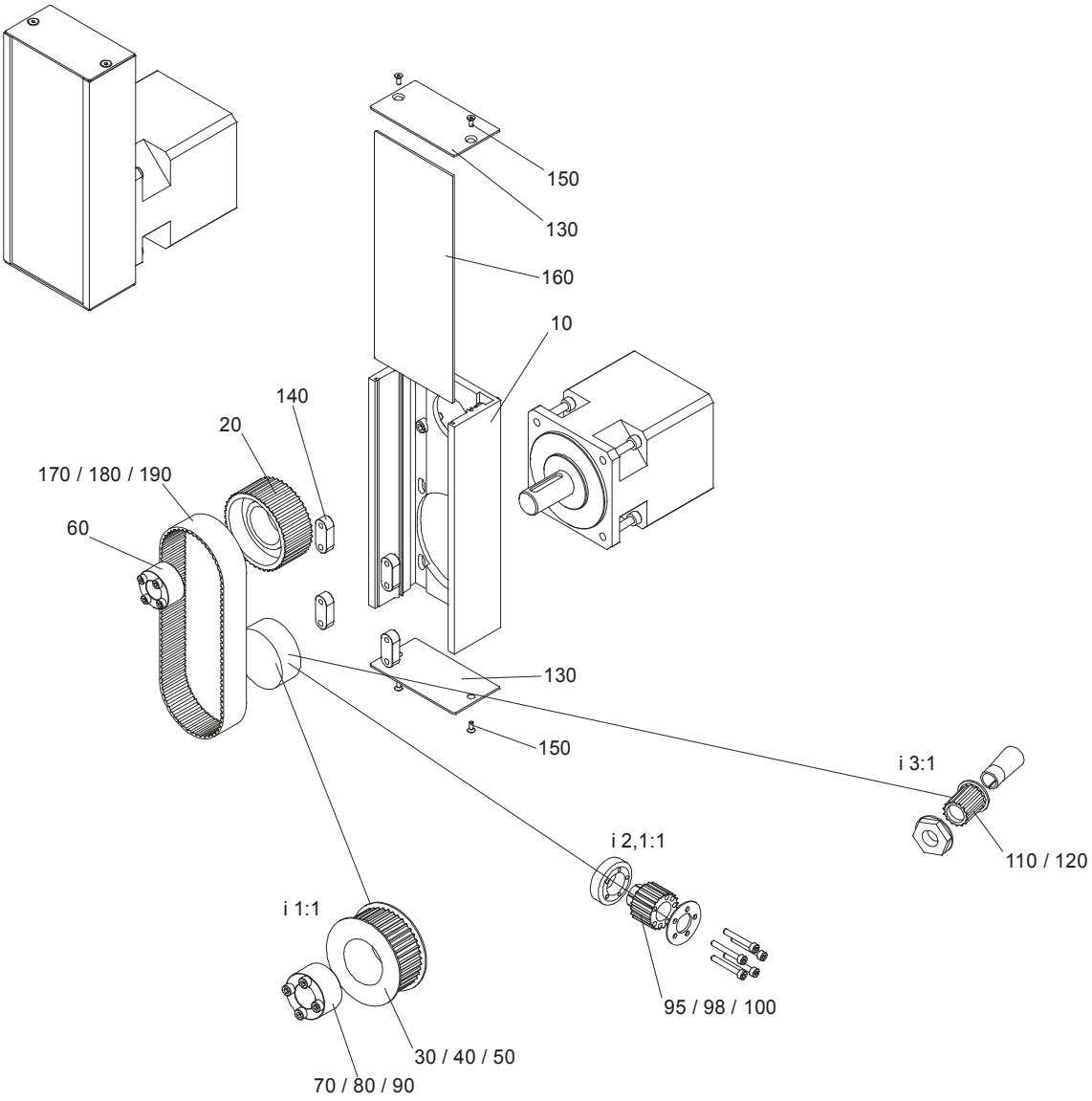


Figure 25: Belt transmission of Module 160/15, exploded view

7.5 Flange

Subassembly 1000476 (drawing see *Figure 26, below*)

Drawing Pos.	Article No.	Part (1)/ Subassembly (0)	Use	Designation
10	1022105	1		Flange, axial
20	1022129	1		Flange plate, axial
30	734161	1		Plastic cover
40	626037	1		Fillister head screw DIN 912-M6 x 20-8.8
50	626244	1		Fillister head screw DIN 912-M6 x 60-8.8
60	627215	1		Locking ring DIN 472-47-1.75
70	1022199	1	+	Coupling dia.=16
75	1022203	1		Toothed ring red
80	1022201	1	+	Coupling dia.=20
90	1022202	1	+	Coupling dia.=22
100	1006530	1	+	Sleeve 12/16
110	1007310	1	+	Sleeve 15/20
120	1008886	1	+	Sleeve 14/16
130	1022206	1	+	Sleeve 19/22

+ = usage depending on version

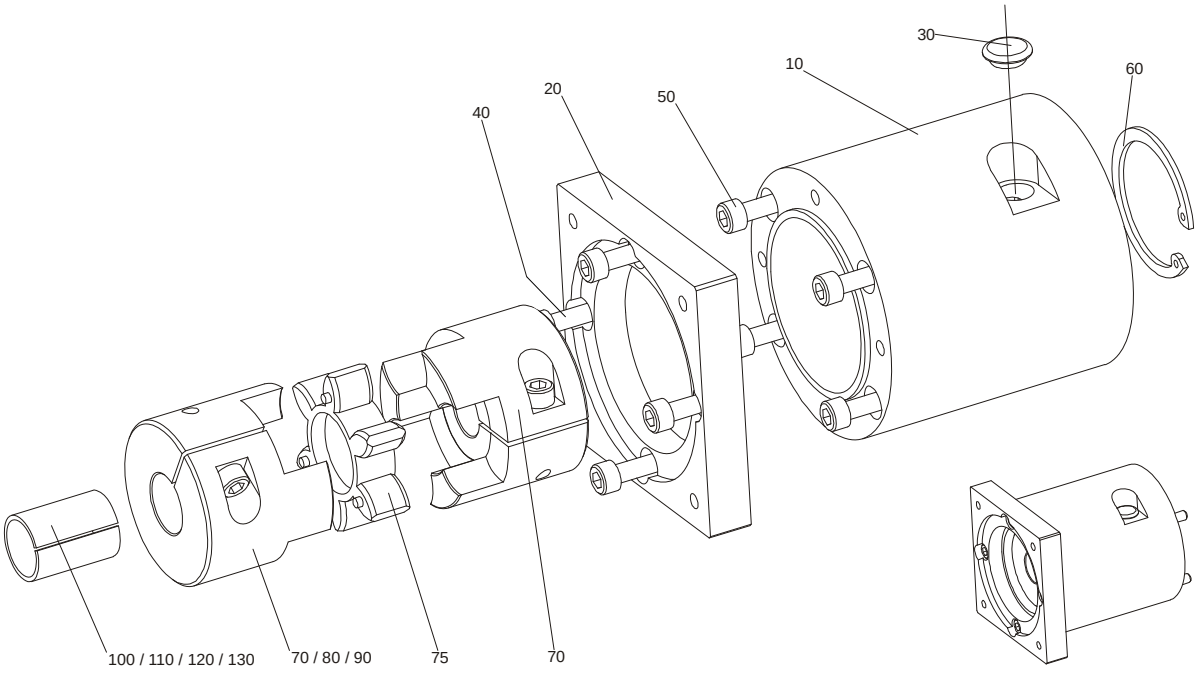


Figure 26: Flange Module 160/15, i = 1:1

CAUTION

Also please pay attention to the list of parts subject to wear specific to the order which is enclosed with the delivery.

7.6 Assemblies/Components Specific to the Version

7.6.1 Installation of Flange Gearbox (e.g. Planetary Gearbox Type PLFE64)

The following drive unit for flange gearboxes is used:

Description	Part No.
Drive unit 80/15/32/FLG	1077831

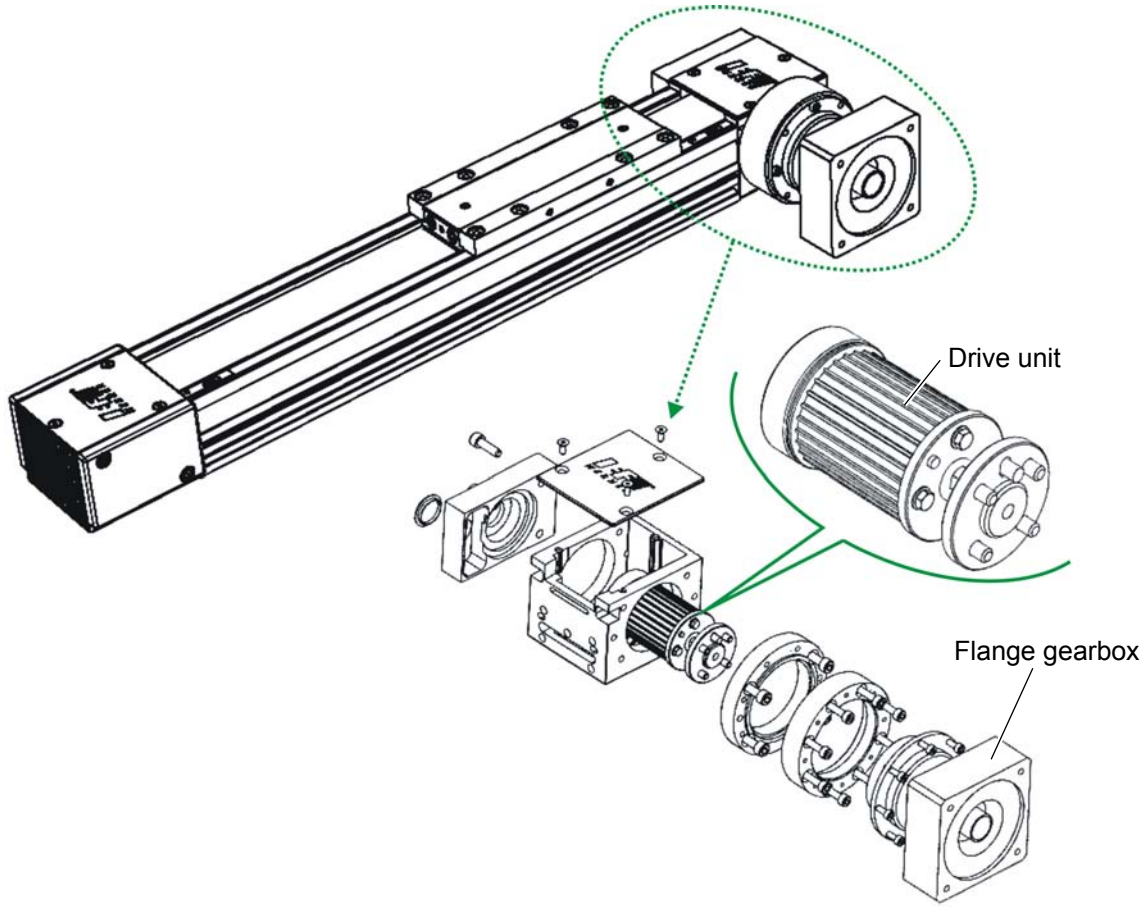
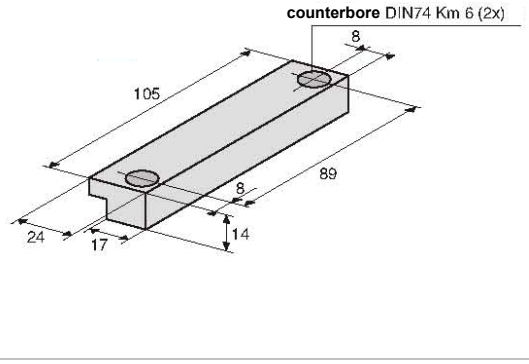
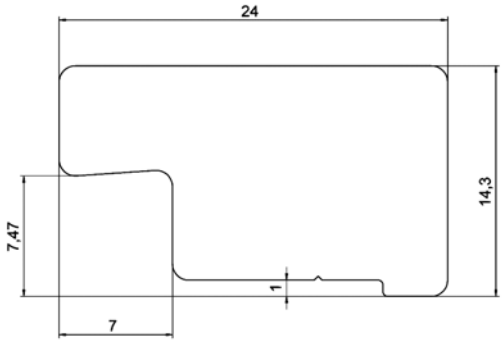


Figure 27: Installation of flange gearbox (example with drive unit 1077831)

7.6.2 Overview of Clamping Elements



Clamping element, example: type 105



Dimensional drawing of clamping element

Clamping element type:	L1 in mm	L2 in mm	Article number:
16	0	16	220701
65	49	65	1062169
80	64	80	1021641
105	89	105	28674
115	99	115	1054491
140	124	140	220702
160	64	160	1039032
Undrilled		Customer-specific	1019192

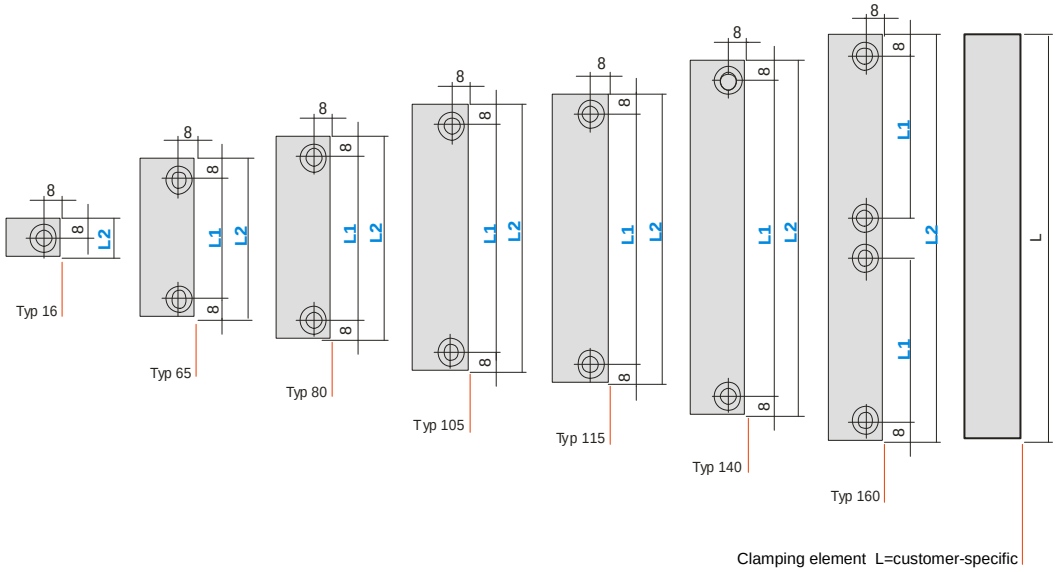


Figure 28: Overview of clamping elements

8 Declaration of Incorporation

EC Declaration of Incorporation in accordance with the EC Directive 2006/42/EC (Machinery), Annex II B

We, the manufacturer:

IEF Werner GmbH

Wendelhofstraße 6

78120 Furtwangen - Germany

hereby declare that the following product (the incomplete machine / partly completed machine):

Designation	IEF Werner subassembly number
Module 160/15 G (operating in opposing directions)	TG1000588

complies with all essential requirements of Directive **Machinery (2006/42/EC)**, as far as the scope of delivery allows:

- Annex I, Article: **1.1.2**; **1.1.3**; **1.1.5**; **1.3.2**; **1.3.4**; **1.5.1**; **1.7.3**.

In addition, the partly completed machinery is in conformity with the following Directives:

Directive **2004/108/EC** of the Council of 15 December 2004 on the approximation of the laws of the Member States relating to electromagnetic compatibility.

Directive **2006/95/EG** of the Council of 12 December 2006 on the approximation of the laws of the Member States relating to electrical equipment designed for use within certain voltage limits.

The technical documentation is compiled in accordance with Annex VII Part B and can be transmitted, in response to a reasoned request by the appropriate national authorities, in electronic form.

List of some harmonized standards used:
EN ISO 12100-1,-2 / EN ISO 13857 / EN ISO 13850 / EN 60204 -1

The incomplete machine supplied by us must not be put into service until the final machine into which the incomplete machinery is to be incorporated has been declared in conformity with the fundamental safety and health requirements according to Annex I of EC Directive 2006/42/EC referred to above.

Name of person responsible for documentation: Frank Reichelt, Technical Writer

Address of person responsible for documentation: See Manufacturer's address

Furtwangen, 21 June 2011 Manfre d Bär (Managing Director)